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Francis Baily, Esq., President, in the Chair.

Joseph Bateman, Esq. LL.D. was balloted for, and duly elected a Fellow of the Society.

The following communications were read:

I. A Memoir on Astronomical Drawing. By Piazzi Smyth, Esq. Communicated by Captain W. H. Smyth, R.N.

The reading of this paper, which was begun at the preceding evening meeting, was now concluded.

The author's attention had been drawn to this subject on account of the small degree of notice, compared with its importance, which it has received from modern astronomers; 2000 years having elapsed since the commencement of the first catalogue of stars by Hipparchus, yet scarcely 100 years since any attempts have been made to hand down to future ages those signs and appearances in the heavens which admit of no direct application of measure or of number.

The recent art of photography having put it into the power of persons provided with clock-moved equatoreals to obtain infallibly correct delineations of the solar spots and of the surface of the moon, the author omits the consideration of these, and confines himself especially to the consideration of nebulæ and similar telescopic objects.

After a minute description of the different classes of nebulous objects which are known to us, the author enlarges upon the importance of diligently observing them with a view to noting whatever changes occur in each individually, and also of those extensive surveys of all that are visible to us, which have been so laboriously executed by the two Herschels. To procure evidence of their changes from one state to another was mainly the object of Sir J. Herschel's paper, read before the Society in 1825 (the recommendations of which have never been followed up), in which he attributes the want of good and trustworthy drawings of them to the extreme difficulty of drawing and engraving them, and to the fact that astronomers are too seldom draughtsmen.

The author then proceeds with the description of astronomical drawing, which may generally be divided into two large classes:— the positive, or that in which the shade is represented by blackness,

and the negative, or that in which the lights are the darkest parts of the picture. As specimens of the first class, he instances Messier's representation of the nebula of *Orion* in the *Memoirs* of the French Academy for 1774. This is a line engraving, and the principal fault is, that the brightest part of the nebula has been made of the utmost whiteness that the paper will allow, so that, to represent the still brighter stars, he has been obliged to make use of black figures. Another and far better specimen of this class is Sir W. Herschel's fine collection of nebulæ in the *Phil. Trans.* for 1811; and the latest and best is that in Sir J. Herschel's Astronomy in the *Cabinet Cyclopædia.*

Of the negative class of drawings he instances Sir W. Herschel's clusters and nebulous stars in the *Phil. Trans.* for 1814; Sir J. Herschel's nebula in *Orion* from the *Memoirs* of the Royal Astronomical Society for 1825; and Mr. Cooper's view of Halley's Comet in 1835. In the above specifications the peculiarities and the imperfections of each are pointed out.

One of the great objects to be attained in astronomical drawing is the absolute fidelity of the details, and in this it differs materially from ordinary drawing from nature, where the accuracy of the *general* resemblance is the great point to be aimed at.

The most common defect in drawings of nebulæ is an unnatural brightness, arising from a neglect of what is technically called *chiaroscuro,* the whiteness of the paper having been taken for the whitest parts of all classes of objects; and deviations from this alone having been marked, to the exclusion of all that local shade which gives the tone to the picture. This, in the old engravers, was owing to the defects of the art as it then existed; but at present it is too frequently aimed at under an erroneous idea of producing a splendid figure; and the author in concluding this part of his subject again observes, that nothing can atone for want of fidelity in the representation which is thus made to suffer, and that the further desiderata appear to be: 1st, a positive representation in which lights shall be represented naturally by lights; 2dly, the adoption of such measures for producing shade, as shall not be visible to the eye; and, lastly, an ability in the artist to engrave his own views.

For the original drawings, Indian ink and the brush are abundantly sufficient, a little practice giving the requisite facility, and the method admitting of the advantage of allowing alteration and correction to a certain extent.

The author then describes the processes of engraving by the aqua-tinta, line, and mezzo-tinto methods, in the first two of which he points out insuperable objections, when applied with reference to the present subject, and shews that mezzo-tinto is admirably adapted for it. He then gives an elaborate description of the latter process, and of the modifications of the method and the apparatus necessary in its application to astronomical drawing. He, in conclusion, observes on the rapidity with which astronomical drawings would increase in value in proportion as they

became more accurate. "It is easy to fancy how exceedingly valuable a series of perfect drawings of Halley's comet, at its various apparitions, would be; how exceedingly interesting to examine into, and have confidence in so doing, the indications of any of that which we may call a secular change in the appearance of this wonderful body, and to determine whether, in the course of its periodical changes, it followed the same laws in each of its perihelion passages. Again, the nebulæ offer a field of inexhaustible speculation and conjecture, in which, says Sir J. Herschel, 'it is easier to propound questions than to offer any probable reply to them.' But meanwhile appeal to fact, by the method of constant and diligent observation, is open to us; and, as the double stars have yielded to this style of questioning, and disclosed a series of relations of the most intelligible and interesting description, we may reasonably hope that the assiduous study of the nebulæ will ere long lead to some clearer understanding of their intimate nature."

II. On a Revision of the Boundaries of the Constellations, as usually drawn on Celestial Maps and Globes. By Francis Baily, Esq. President of the Society.

The advantage and importance of having the boundaries of the constellations of the stars distinctly and properly defined on our maps and globes, must be evident to every one that has occasion to refer to so useful and convenient an auxiliary to the practical astronomer: for unless due attention is paid to some clear and well-organised plan of arrangement, and to some regular method of drawing the lines that constitute the limits of the constellations, much confusion and intricacy soon enters into the system, and not only does the whole become an unintelligible mass of intersecting and undefinable boundaries, but the nomenclature of the catalogues also becomes sadly deranged. This is no ideal annoyance; for the present state of all our modern maps and globes bears evident proofs of the existence of the evil to which I have here alluded: and the catalogues likewise partake of this confusion. But the time has arrived when this inconvenience, now become so troublesome and perplexing, can be no longer tolerated. The proposed extension of the catalogue of this Society, now about to be sent to the press, and in which there are a number of additional stars selected from various works, differing very essentially in the nomenclature of the stars which they contain, requires that every star thus introduced should be compared with maps in which the boundaries of the constellations are constructed and drawn upon some definite and systematic plan, so that the name of the constellation to which the star may be thus found to belong, should be correctly affixed thereto, and thus shew at once its true and accurate locality in the heavens. This can only be done by a general revision of the whole system.

Ptolemy drew his *figures* on the globe in such a manner that the stars should occupy the positions that he has designated in the

descriptions of them in his catalogue: and the boundary of each figure thus drawn was, in fact, the limit of the *constellation* intended to be represented. For, when he observed any stars that were beyond the outline of his figures, he denominated them ἀμορφωτοι, *unformed;* and this method was long followed by his successors. But in the time of Tycho Brahé this plan was in some measure departed from, and a more comprehensive extension of the original limits adopted, by including the unformed stars within the boundaries of one or other of the contiguous constellations: so that all the constellations abutted against one another, and the whole of the heavens was thus occupied by one portion or another of some known constellation, the *figures* remaining the same. When Hevelius formed his catalogue, he observed many stars, in the large spaces between Ptolemy's figures, that had not been previously noticed; and in these spaces he introduced new figures, or constellations, many of which are retained even to the present day. But, the greatest innovator on this system was Bode, who although no great observer himself has, in his Catalogue and in his Maps, filled the heavens with a host of new figures and constellations that were by no means requisite, and that tend only to annoy and confuse, without presenting one single advantage.

In these remarks I have reference only to the constellations in the northern hemisphere; or, at least, to those constellations only that are visible in the northern latitudes, which, of course, include many of the southern stars. When the Southern Ocean however was visited by European navigators in the sixteenth century, a map of the portion of the heavens, there visible and not hitherto described, became requisite and was soon formed: but it was not till the time of Halley that any catalogue or map of the southern constellations could be depended upon. The constellations that were adopted or introduced on this occasion were in some measure altered and increased by Lacaille in the last century. But as this subject has been already discussed, and is still under consideration, by Sir John Herschel, I shall not further allude to it in this place, except as to those points that may be connected with the general view which I am about to take of the whole question.

When Hevelius formed his catalogue of stars, he at the same time constructed the map of the constellations, in which they were to be respectively placed. By this method he in some measure preserved an uniformity in his classifications and arrangements, and obviated any considerable distortion of the boundaries of the constellations, having himself defined the limits. But Flamsteed did not possess this advantage, since his maps were not constructed till long after his catalogue had been formed, and indeed not till many years after his decease: and as Hevelius's maps were not published till after Flamsteed had commenced his observations with the mural quadrant, the *Uranometria* of Bayer was the only authority to which he could refer even for an approximate classification of any new stars that he might observe. This however appears to have been often done without due consideration or

attention, and the name of a constellation was frequently written down, in the margin of the observation-book, as that which, *at the time of observation*, Flamsteed supposed to be the true constellation under review; but which afterwards, when the observations came to be reduced and arranged, have been found to be incorrect. An inspection of Flamsteed's manuscript books, at the Royal Observatory at Greenwich, and indeed the second volume of his *Historia Cœlestis*, will fully confirm this remark. The consequence has been that several of the stars in his catalogue have been inadvertently arranged and classed under erroneous constellations: and our modern map-makers, instead of correcting these obvious errors in due time, and in a proper manner, or of laying down any general principle on which the boundaries might be constructed and drawn in all cases of new discoveries, have suffered the evil not only to continue, but to increase to such a degree by subsequent innovations, that the celestial maps have at length become a system of derangement and confusion. For, a practice seems to have been adopted that whenever a modern astronomer has, in his catalogue, inadvertently introduced a star which he has designated by an erroneous constellation, the map-maker, or globe-maker, immediately extends the circuit of the constellation so as to embrace it within its limits; although in so doing he causes the most inconvenient and absurd distortion of the boundary lines, and, in some cases, actually includes thereby stars that ought not to have been disturbed; which consequently renders the map, or the globe, a mass of confusion and intricacy, and totally unfit for accurate reference. The inspection of any modern celestial map or globe will fully confirm this remark.

Before a catalogue of any considerable extent, containing new stars, is finally arranged as to its nomenclature, a map of the constellations, or at least their general outlines or boundaries, ought to be laid down upon some uniform and acknowledged system. The plan which was pursued by Ptolemy, and which with some slight alterations has been continued down to the present time, may serve as a basis for any modern improvements. Its antiquity, and the numerous references which have always been, and still are, constantly, made to it, render it now difficult (even if it were desirable) to make any considerable deviation from a system which is associated with so many scientific, historical, and mythological recollections. But whatever plan be adopted, it ought to be preserved with some degree of uniformity and regularity: so that if an author has inadvertently designated a star by a wrong constellation, the name in the catalogue should be amended, rather than the boundary of the constellation distorted. This however will occasionally admit of some laxity; for if such star should happen to be near the confines of a constellation, a *slight* variation in the curvature of the boundary may be justly allowed in the case of a well-recognised star, more especially as the precise limits are in some measure arbitrary. But where a star in any catalogue is designated by the name or title of a constellation, to which it

manifestly does not belong, and has been recorded and arranged as one of the stars in such constellation, the only proper mode of correcting the error is to alter its name and character in the catalogue, and thus restore it to its proper designation and position.

As an example of the confusion which is created by such misnomers, I need only adduce the case of two stars in Flamsteed's catalogue; one of these is called 44 *Lyncis*, but whose position is in the middle of *Ursa Major*, and was so located by Ptolemy; and the other is 19 *Ursæ Majoris*, whose position is in the middle of *Lynx*. Now the map-maker, in order to comprise these stars within the limits of the constellations in which Flamsteed has thus inadvertently and erroneously placed them, has extended the boundaries of each of these constellations in such a confused and intersecting manner that the limits are scarcely intelligible. The proper mode would have been to alter the nomenclature, at once, in the catalogue; and thus prevent the perpetuity of the error. Another example occurs in the star 13 *Argus* in Flamsteed's catalogue; which star is in fact situate in the constellation *Canis Minor*, that lies to the north of the intermediate constellation *Monoceros*: and the map-maker, in order to include this distant star within the limits of *Argo*, has in a similar manner traced a double line directly through the body of *Monoceros*, which thus appears like two distinct constellations. Many other examples of similar distortions might be adduced, but it is needless to multiply proofs of such evident absurdities, which need only be seen to be duly estimated and repudiated.

Cases of another kind occur where the constellation is improperly and unnecessarily extended, although there may not be any intersection of the boundary lines: such as that which may be seen in Flamsteed's catalogue of stars in the constellation *Cratera*, where many of the stars there introduced do not fall within the limits of the figure drawn by Bayer; nor is Flamsteed's extension of the boundaries warranted by Ptolemy's description of the position of the stars in that constellation.

Much confusion has also arisen from inattention to a regular classification and arrangement of certain clusters of stars that lie near the adjoining confines of two contiguous constellations; such as the cluster of stars about the head of *Serpens*, which are strangely intermixed with the stars that are considered to be in the arm of *Hercules*: and many similar cases may be seen in *Monoceros* and *Hydra*, *Draco* and *Cepheus*, *Auriga* and *Camelopardus*, *Libra* and *Hydra*, *Hercules* and *Ophiuchus*, *Vulpecula* and *Cygnus*, &c.

But the most striking proof of the inattention of map and globe-makers, to accuracy of arrangement, occurs in the cases where the author of the catalogue has placed the same star in two distinct constellations, and where unfortunately (in constructing the map) the erroneous one has been selected for its location. A singular case of this kind occurs with Flamsteed's 25 and 27 *Aquarii*, which are the *same* stars as 6 and 11 *Pegasi*. The map-maker has cor-

rectly placed the stars in the head of *Aquarius*, and then, as if doubtful of such a step, or desirous of preserving the double interpretation, extends the boundary line of *Pegasus* so as to embrace it within the limits of that constellation.

Cases of such double insertions in a catalogue are not to be wondered at in the early state of the science, where minute accuracy was not always attainable, nor the error always discoverable on account of the mode of classification; and we accordingly meet with a few of such cases in the catalogues of Ptolemy and others. But in more modern times the error has arisen principally, if not solely, from the method of arranging the stars, in a catalogue, under distinct and separate constellations, whereby the similarity of position is not readily discovered; and this will account for the synonyms that occur in the catalogues of Flamsteed and Hevelius: but when discovered they ought to be at once corrected, and not suffered to remain a perpetual blot in the catalogue. The modern mode, however, of arranging the *whole* of the stars in a catalogue, according to the order of their right ascension, without any regard to the constellation in which they may be placed, prevents the occurrence of a similar inconvenience in future.

But a similar source of error arises, and frequently causes doubt and difficulty to the map-maker, when the authors of two different catalogues vary in their decision as to the constellation in which a star should be located. Numerous instances of this kind may be seen in comparing the catalogues of Hevelius and Flamsteed, or either of these with the catalogues of Piazzi or Taylor: which confusion has arisen from a want of a system of well-defined and acknowledged boundaries to the respective constellations, whereby the astronomer may know when he is correct in locating the observed stars. Let any one examine the stars in Hevelius's constellation *Andromeda*, and he will find that Flamsteed has placed some of them in *Pegasus*, one in *Perseus*, and one in *Lacerta*: whilst Piazza places one of them in *Cassiopeia*. Those only who have to make frequent references to the smaller class of stars, and are desirous of identifying them, and of comparing the results of different observers, can justly appreciate the labour and inconvenience that occurs from such a confused state of location. And with respect to the map-maker, it is a forlorn hope to expect from him any thing like regularity, uniformity, clearness or precision so long as he continues the present system of circumscribing every star with the boundary line of the constellations to which the author of the catalogue, in which it is found, considers it to belong.

On the maps published by the executors of Flamsteed, there are not any boundaries surrounding the figures that are there drawn: for all the stars in Flamsteed's catalogue are placed in their true positions, as given in the British Catalogue, without any boundary lines, and those who consult the maps are at liberty to draw the boundaries in such manner as they may think most proper. It is the catalogue which is in error, and not the maps: and it is very

probable that the editors were aware of this circumstance, having found out the mistake, when it was too late to mend it.

Bode appears to have been the first that drew boundary lines to the constellations; and in so doing, instead of correcting the catalogue and preserving an uniform system of drawing his lines in a simple and regular manner between contiguous constellations, whereby the contour was distorted as little as possible, he introduced the practice (above mentioned, and which has been implicitly followed by the English map and globe-makers) of *hooking* within such limits all the stars that Flamsteed or any subsequent astronomer had inadvertently designated by a wrong constellation; thus disfiguring and distorting the boundaries and rendering them very intricate, perplexing, and annoying. In his large set of celestial maps, however, which he published about twenty years afterwards, he became sensible of his error, and very prudently discontinued this absurd practice, and confined his boundaries to their proper restriction. But the English map and globe-makers, instead of following this laudable example, have not only continued the evil, but have carried the practice to such an enormous and ludicrous extent that the modern celestial charts and globes at the present day exhibit a complete mass of intersecting and conflicting lines, utterly subversive of the object and design of such a divisional arrangement of the heavens. Harding, in his celestial atlas, has avoided this confusion.

In order that our catalogues and our maps (or globes) should speak the same language, and that they should at the same time be clear and intelligible to those who consult them for the purpose of identifying the stars in the heavens, it is requisite that the nomenclature of the stars, or, in other words, the boundaries of the constellations, should be placed on a more uniform, regular, and well-defined plan: but, in making this necessary reform, regard must be had (especially in the northern hemisphere) to long-established names and authorities, which by their antiquity and constant use have acquired full possession of the public opinion and favour. Now, it fortunately happens that very material improvements may be made in the present mode of delineating the boundaries of these constellations, without encroaching at all on any of the ancient arrangements, and without much alteration in those of more modern date. All that is required will be the correction of some of those manifest errors which have been caused principally by following too closely and implicitly the arrangement and classification of the stars in the constellations in Flamsteed's catalogue; and which has opened the door to further encroachments by his successors.

I have alluded here to the correction of Flamsteed's catalogue only, not as being the only one, (or even the most discordant) that requires reform, since similar anomalies, and equal in amount, are to be found in the catalogues of Hevelius, Piazzi, Taylor, and perhaps some others; but because it is the only one in these latter days (if we except Hevelius's which is not frequently referred to) in which the stars are quoted and known by the numerical order and

position in which they stand in the respective constellations; those of other astronomers being always designated by the order of their right ascension. And as all our map and globe-makers fill up the boundaries of the constellations with Flamsteed's *numbers*, as they find them in his catalogue, whether properly located or not, it is requisite in the first instance, to place those stars in their proper positions. The method which I should propose for carrying this object into execution, would be as follows:

1. Ptolemy's constellations to be preserved, and to form the basis of the construction and arrangement of the constellations in the northern hemisphere.

2. Nine of the constellations adopted by Hevelius, to be retained; but no others to be introduced in the northern hemisphere. These nine constellations are *Camelopardus*, *Canes Venatici*, *Coma Berenices*, *Lacerta*, *Leo Minor*, *Lynx*, *Monoceros*, *Sextans*, and *Vulpecula*.

3. Ptolemy's figures to be attended to, so that the drawings (if any) should embrace all the stars mentioned by him, and in their true places. *Libra* perhaps may be an exception to this rule, as this constellation has been introduced instead of the Claws of *Scorpio* adopted by Ptolemy. There are also four stars in Ptolemy's catalogue that are common to two adjoining constellations: namely Flamsteed's 52 *Bootis*, which is common to *Hercules;* 112 *Tauri*, which is common to *Auriga;* 79 *Aquarii*, which is common to *Piscis Australis;* and 21 *Andromedæ*, which is common to *Pegasus*.

4. If Bayer or Flamsteed has introduced any star from another constellation that would distort the correct drawing, it must be named, in the catalogue, after the constellation into which it is correctly inserted, and its pseudonym must be discontinued. In other words, the catalogue must be corrected, but not the boundaries of the constellations distorted.

5. Bayer's and Flamsteed's errors being thus rectified, and the figures of the constellations introduced by Hevelius being properly drawn (if requisite) within the intermediate spaces, the boundaries of the constellations, thus decided on, should be carefully drawn and laid down agreeably to some systematic plan, which may thus serve as the perpetual limits of the constellations: and no distortion of the outlines or boundaries of any of these constellations, in the northern hemisphere, should be permitted in consequence of the mistakes of any subsequent astronomers in arranging their stars under improper divisions of the heavens.

6. As all Flamsteed's stars are designated by the numerical order in which they stand in the constellation, and as these numbers are in most cases well known and recognised, it is desirable to preserve his stars within the boundaries of their respective constellations, wherever it can be conveniently done. But in the case of synonymous stars (amounting to 22) this is evidently impossible; and there are also several other cases, which have been already alluded to, (amounting to about 70) where it is impracticable, consistently with the rules here proposed. These anomalous stars must

be corrected in the catalogue, and there located in their proper constellations.

7. As all the stars in the catalogue of Piazzi are designated and always quoted by their *number* in the *hour* of right ascension, and those of Taylor and others, by their *ordinal number*, it is not so requisite to pay *special* attention to inscribing such stars within the boundaries of the constellations to which they are assumed to belong; and which will frequently be found to be discordant. Still, if any of these stars lie near to the boundaries so assumed, a slight detour may be allowed in the drawing.

Such is the plan which I propose to adopt in the nomenclature of the stars in the northern constellations, which will form a large portion of the extensive catalogue now about to be sent to the press: and I have thought it proper thus to bring the subject before the meeting, in order that it may undergo due deliberation and investigation prior to its final adoption; for it is absolutely requisite that some effectual steps should now be taken to divest the subject of its present confusion and ambiguity.

III. Account of an Observation of the Solar Eclipse of the 7th July, 1842, made at Starfield Observatory, together with an Account of some Chronometrical Experiments made to determine the Longitude of that Observatory. By W. Lassell, Esq.

The morning of the 8th July (civil reckoning) before sunrise was gray and partially clear. During the time of the eclipse scarcely a cloud remained to interfere with the observation of the eclipse. The telescope used was the nine-feet equatoreal, described in the twelfth volume of the *Memoirs* of this Society, to which was attached a parallel wire micrometer. The observation of the time of the commencement of the eclipse was made very satisfactorily, though the limb of the sun was serrated by the undulations of the atmosphere, the eye having been directed exactly to the point when the contact took place. The observed time of the beginning was $23^h\ 49^m\ 19^s{\cdot}1$ sidereal, or $16^h\ 46^m\ 21^s{\cdot}8$ mean time at the observatory. The emersion was well observed, and took place at $1^h\ 36^m\ 7^s{\cdot}0$ sidereal, or $18^h\ 32^m\ 52^s{\cdot}2$ mean time.

The chronometrical determinations were carried into effect through the kindness of the Rev. W. R. Dawes and of Mr. Dent, the former of whom conveyed to Liverpool, by railway, the six chronometers lent for the purpose by the latter. Their errors were obtained at the Royal Observatory, Greenwich, and at Mr. Bishop's Observatory in the Regent's Park, on the 25th of July, previously to setting out. Mr. Dawes arrived at Starfield Observatory about seven o'clock on July 26, when the chronometers were immediately compared with the sidereal clock. The chronometers remained at Starfield till the 10th of August, at 19^h, having been carefully rated from day to day, whenever celestial observations could be obtained.

They were compared both at Mr. Bishop's Observatory and at Greenwich on their return, though the author, suspecting an error

in the comparisons of two of them at the latter place, did not include them in the results of the journey up.

The mean result for the difference of longitude between Mr. Bishop's Observatory and that of Starfield, from the six chronometers, in both journeys, is $11^m\ 10^s{\cdot}06$, and, assuming Mr. Bishop's Observatory to be $37^s{\cdot}0$, the longitude of Starfield, west from Greenwich, results $11^m\ 47^s{\cdot}06$. The result derived from the direct comparisons made at Greenwich is $11^m\ 47^s{\cdot}2$. The journey down, when calculated by itself, gave $11^m\ 10^s{\cdot}07$ for the difference of longitude between Mr. Bishop's and the Starfield Observatory, and the comparisons made at Greenwich and the former Observatory, on the 25th of July, gives for their difference of longitude $36^s{\cdot}96$. The above results have not been cleared of the effects of personal equation of the observers, this not having been yet ascertained. The author, in conclusion, assumes that his longitude is $11^m\ 47^s{\cdot}1$, which he thinks cannot be far from the truth.

IV. Professor Schumacher's third, fourth, and fifth Circulars on the great Comet of 1843.

The following is an abstract of the most important of the observations recorded in the above:—

Observations by Professor Bessel at Königsberg:—

	h m s	R.A. =	Decl. =
March 26	8 14 38 M.T.	54° 48′ 25″·3	−7° 36′ 23″·9
27	8 7 28	56 5 25·0	7 21 55·5
29	8 19 4	58 29 56·2	6 52 24·9

By M. Kreil at Prague:—

	h m s	R.A. =	
March 25	8 19 35 Sid.	53° 30′ 55″·5	° ′ ″
	8 20 40	.....	Decl. = −7 54 1·9

By Professor Encke at Berlin, for 8^h Berlin mean time:—

	R.A. =	Decl. =
March 29	58° 30′ 4″·1	−6° 53′ 2″·9
30	59 37 10·1	6 39 45·0
31	60 42 6·0	6 26 19·6

The unsatisfactory representation of the observations by a parabolic orbit, and especially the impossible perihelion distance, induced M. Encke to try whether another conic section would represent them better; and he has deduced the following hyperbolic elements:—

Time of Perihelion Passage, Feb. 27·49778, Berlin mean time.

Long. of the Perihelion	179° 2′ 29″·9	From the mean Equinox
—— Node	4 15 24·9	of March 0.
Inclination	35 12 38·2	
Eccentricity.....	1·00021825	

ψ 1° 11′ 49″·0 (e = Sec. ψ)

Log. Perihelion Dist. 7·717642

Motion retrograde.

The above observations represent the observations from March 20 to March 31 pretty well.

Observations by M. de Vico at Rome :—

	h m s		h m s		° ′ ″
March 18	7 30 50·5 M.T.	R.A. =	2 47 47	Decl. −	9 50 55·4
19	7 58 35·8		2 55 37		9 30 43·7
20	7 38 44·5		3 2 44		9 13 6·1

By M. Argelander at Bonn :—

	h m s		° ′ ″		° ′ ″
March 21	7 56 25·8 M.T.	R.A. =	47 27 21·4	Decl. = −	8 56 30·0
25	8 10 23·8		53 31 28·8		7 51 15·0
28	8 2 46·6		57 21 6·5		7 7 10·6
29	7 57 45·4		58 31 11·9		6 53 0·7

from which, viz. those of March 21, 25, and 29, the following elements are deduced :—

Time of Perihelion Passage, 1843, Feb. 27·497, Berlin mean time.

Log. q 7·85576.

Dist. of the Perihelion from the Node ...	83° 28′ 58″ (Perihelion 277° 29′ 21″)
Node	0 58 19
Inclination	35 44 22

Motion retrograde.

By Professor von Steinheil at Munich :—

	h m		° ′ ″		° ′ ″
March 19	7 48 M.T.	R.A. =	43 52 24	Decl. −	9 40 6
20	7 48		45 42 7		9 13 54
21	7 48		47 24 54		8 57 22·5
22	7 33·3		49 2 46		8 40 19
23	7 52·4		50 36 30		8 23 4
30	7 58·3		59 37 42		6 40 4

The above observations M. Steinheil failed to represent by a parabolic orbit.

By M. Nacolai at Manheim :

	h m s		° ′ ″		° ′ ″
March 21	7 44 13 M.T.	R.A. =	47 25 40	Decl. = −	8 56 43
25	8 13 36		53 30 45		7 52 2
29	8 16 50		58 31 46		6 52 52
30	7 59 2		59 38 20		6 39 ±

from which observations, viz. those of March 21, 25, and 29, are deduced the following parabolic elements :

Time of Perihelion Passage, 1843, Feb. 27·4256, Berlin mean time.

Log. q	7·567843
π	280° 32′ 25″
Ω	4 36 0
i	35 10 39

Motion retrograde.

By M. Capocci at Naples:

	h m s		
March 17	7 46 5·9 Sid.	R.A. = 39° 58′ 38″·4	Decl. − 10° 5′ 36″·0
22	7 48 2·3	49 2 13·2	8 40 7·2
27	7 46 11·8	56 4 19·2	7 21 56·4
31	8 26 7·3	60 41 7·8	6 26 40·0

And from the first three of the above observations are deduced the following elements:

Time of Perihelion Passage 1843, Feb. 27, $9^h\ 55^m$, Greenwich mean time.

q	7·63148
ϖ	279° 59′ 7″
Ω	3 55 17
i	35 15 42

Motion retrograde.

By M. Plantamour of Geneva:

March 30 $7^h\ 50^m\ 23^s·6$ M.T. R.A. = 59° 37′ 50″ Decl. = − 6° 39′ 37″

by means of which and his former observations he finds the following corrected elements:

T	1843, Feb. 27·4461, Geneva mean time.	
q	0·005807	
ϖ	278° 18′ 3″·0	From the mean Equinox
Ω	0 51 4·1	of 1843, January 1.
i	35 45 39	

By Professor Knorre at Nicolajew:

	h m s		
March 19	7 34 0 M.T.	R.A. = 43° 46′ 12″·6	Decl. − 9° 32′ 14″·2
22	7 51 54	48 57 53·1	8 40 54·2
25	7 49 17	53 24 16·7	7 52 43·0
31	8 6 31	60 38 59·3	6 27 5·5

By Professor Kreil at Prague:

	h m s		
March 29	8 21 59 M.T.	R.A. = 58° 31′ 0″·6	Decl. − 6° 54′ 12″·3
30	8 16 41	59 38 15·5	6 39 50·5
31	8 14 22	60 43 3·2	6 26 10·1
April 1	8 22 54	61 45 6·7	6 14 32·1

V. Circular Letter from Professor Schumacher on a New Telescopic Comet discovered by M. Mauvais on May 3.

The comet presents the appearance of a small oval nebulosity of about 3′ in diameter, and it has in its centre a bright spot.

On May 3, at $15^h\ 10^m\ 54^s$, Paris mean time.

R.A. =	326° 33′ 44″
Decl. = +	29 35 10

The Secretary announced that several communications had been received respecting the Great Comet, which would be read at the next meeting.

Vol. XIII. of the Memoirs is now published, and may be had of the Assistant Secretary, at the Apartments of the Society. Price to Fellows Ten Shillings.

Vol. XIV. has been previously announced.

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